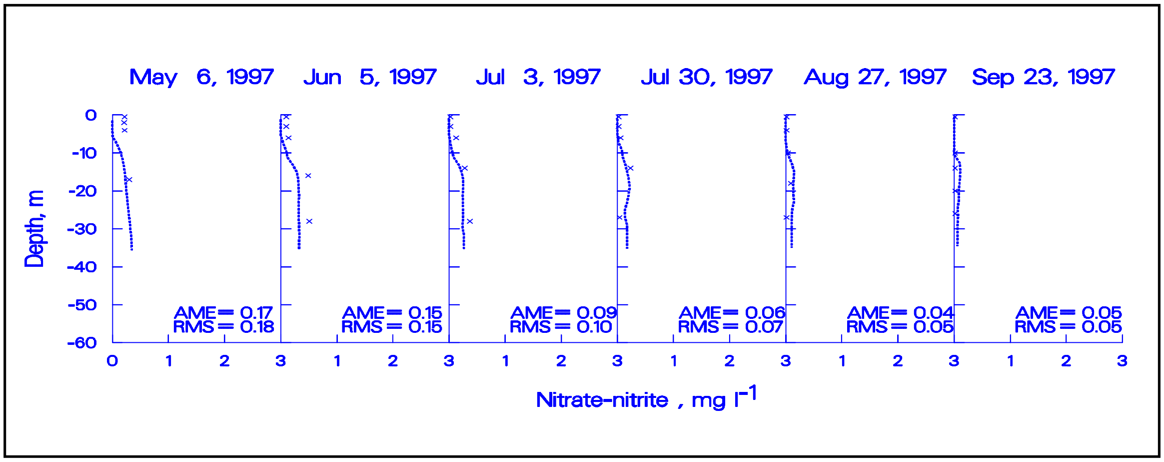

Figure A180. 1996 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for station 09

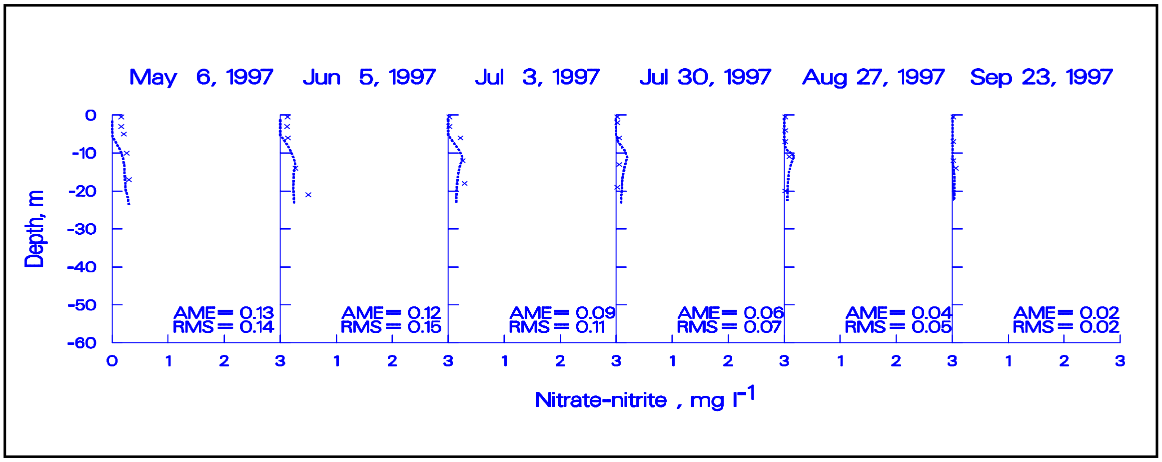

Figure A181. 1996 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for station 18

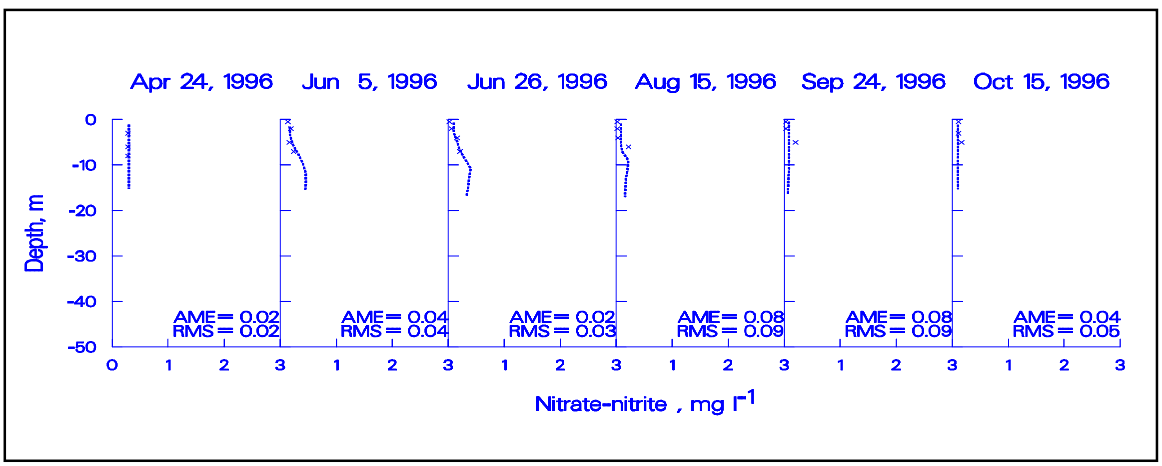

Figure A182. 1996 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for station 45

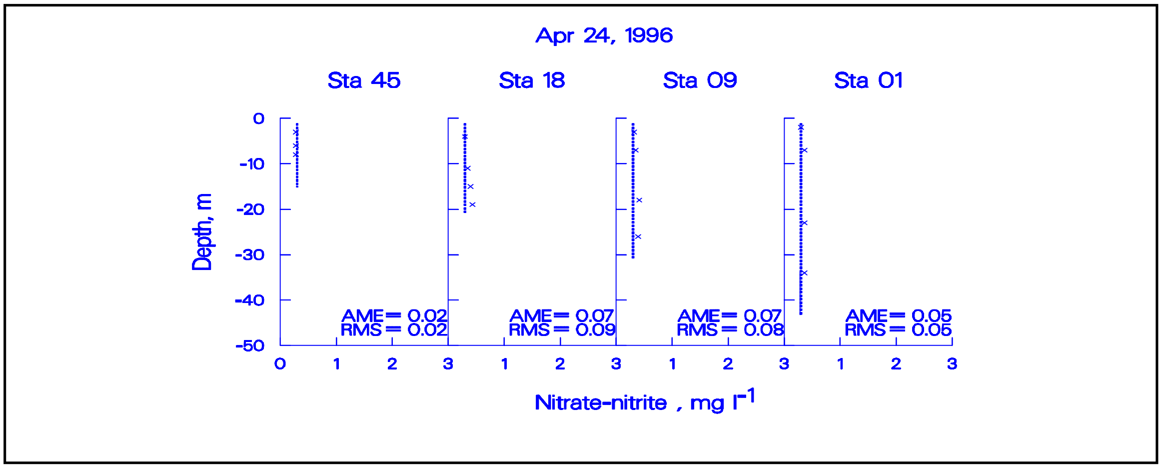

Figure A183. 1996 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem, April 24

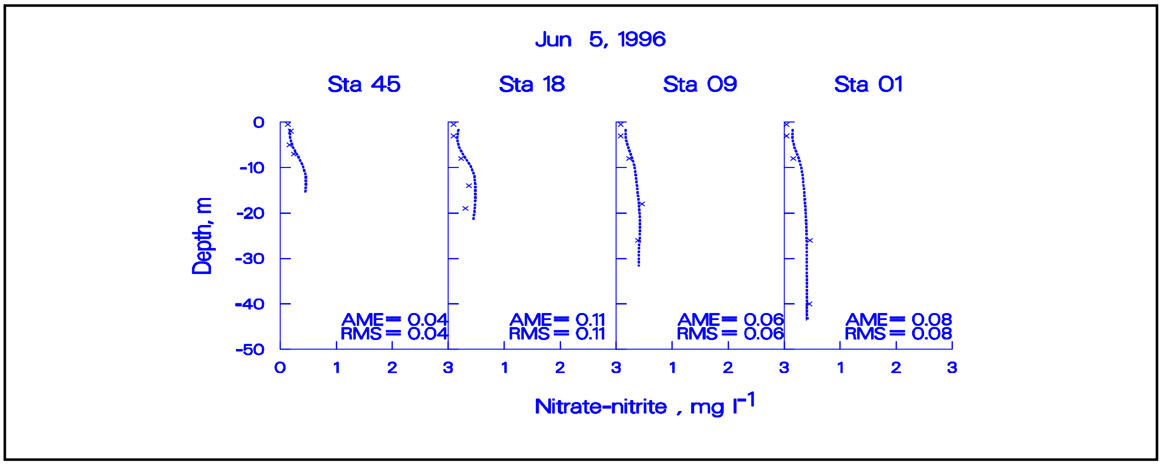

Figure A184. 1996 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem, June 5

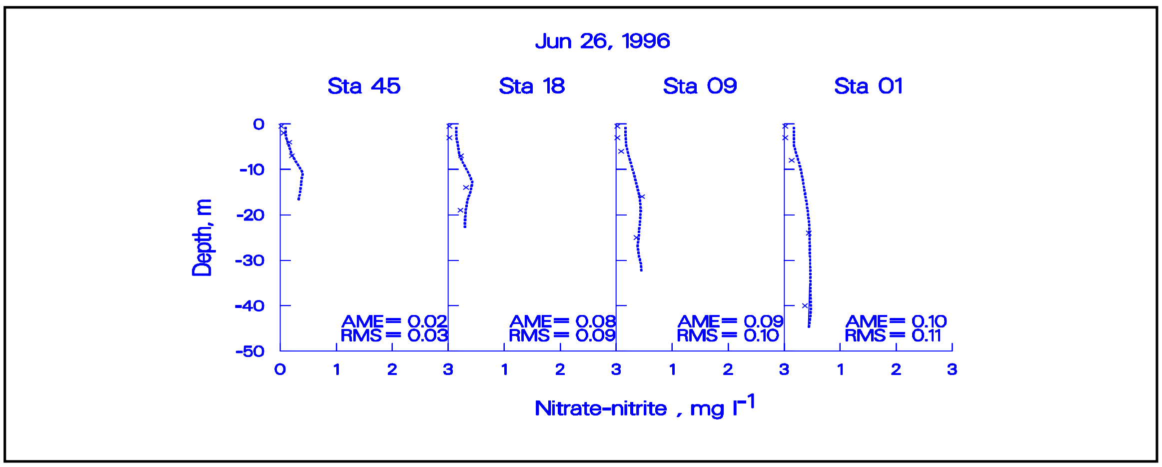

Figure A185. 1996 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem, June 26

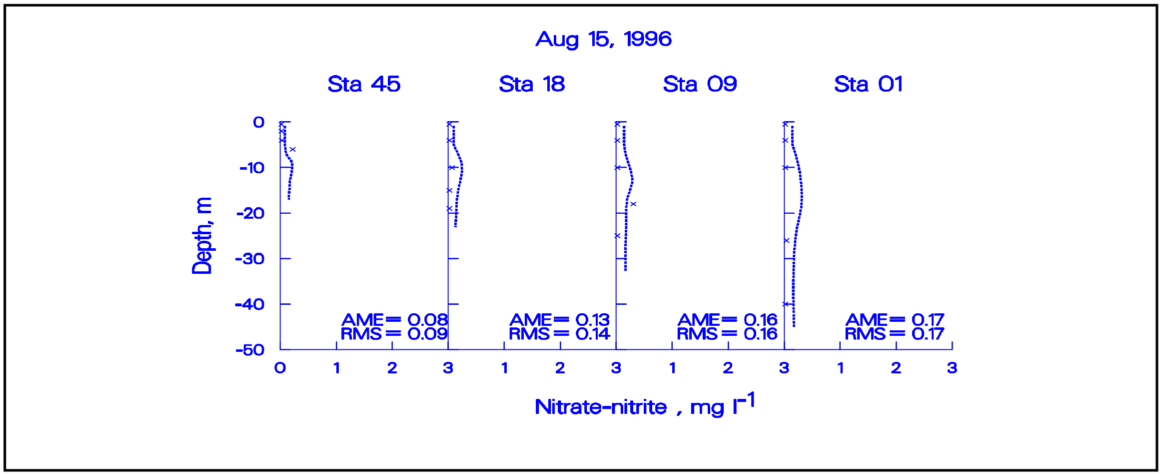

Figure A186. 1996 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem, August 15

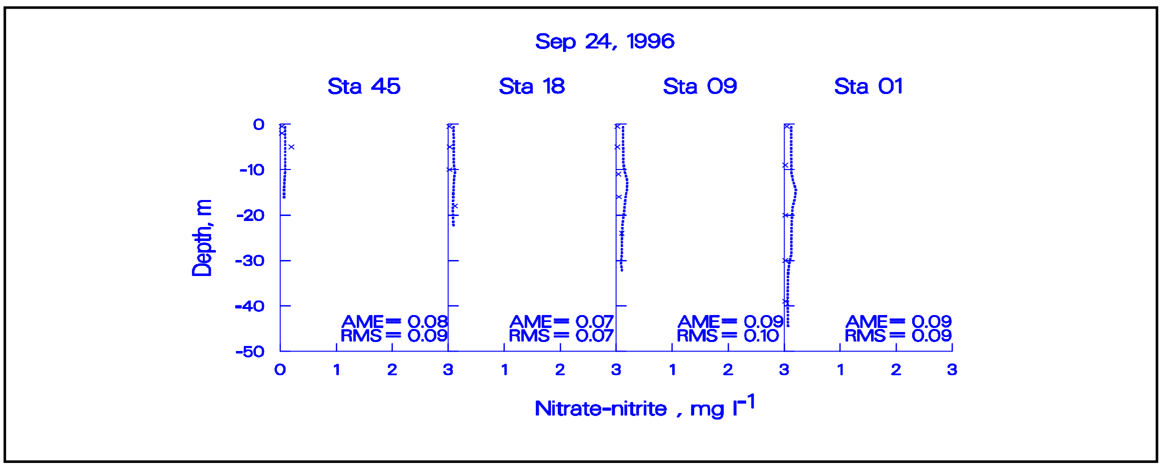

Figure A187. 1996 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem, September 24

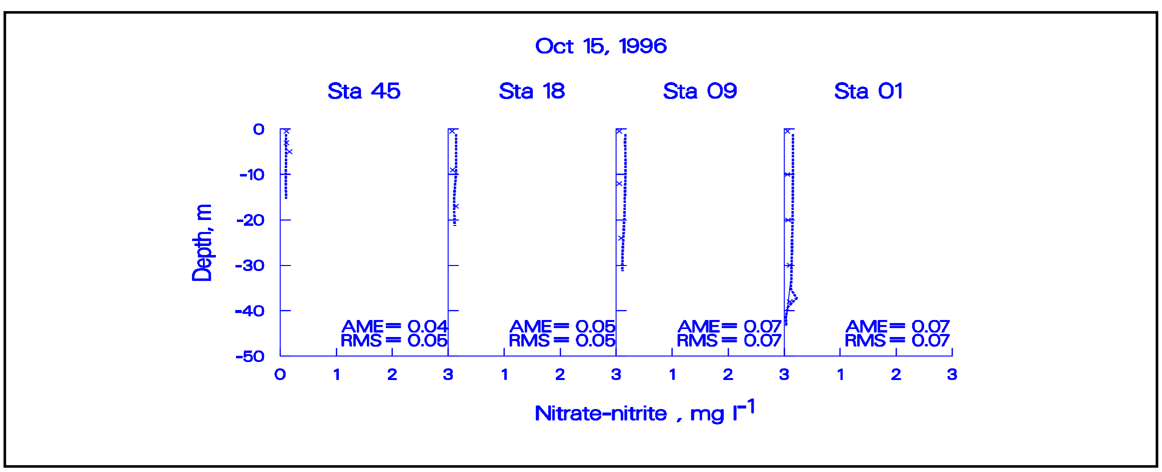

Figure A188. 1996 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem. October 15

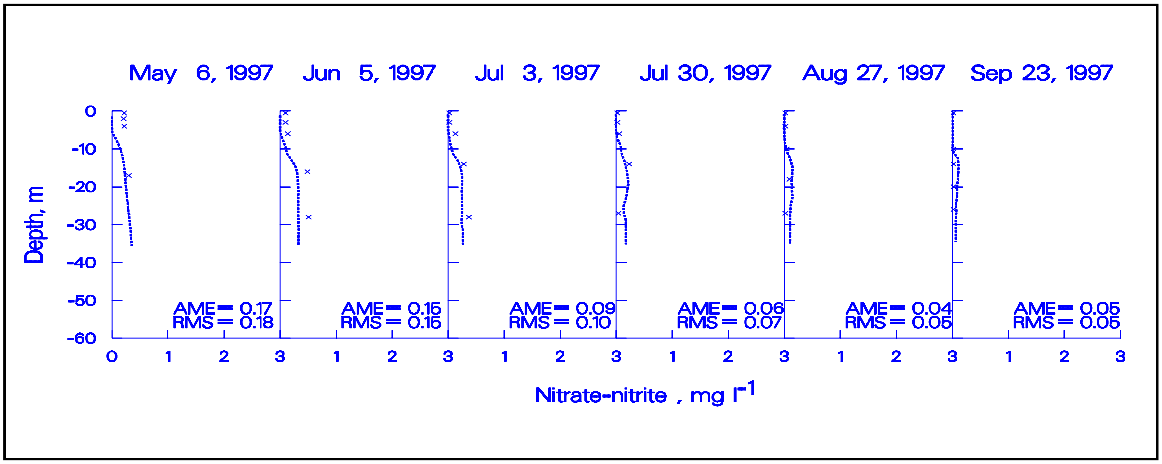

Figure A189. 1997 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for station 09

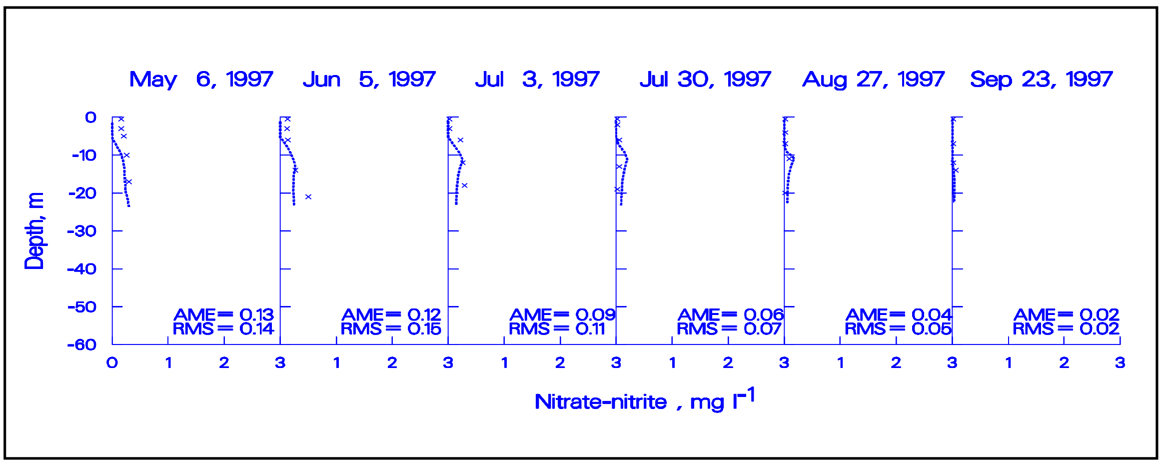

Figure A190. 1997 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for station 18

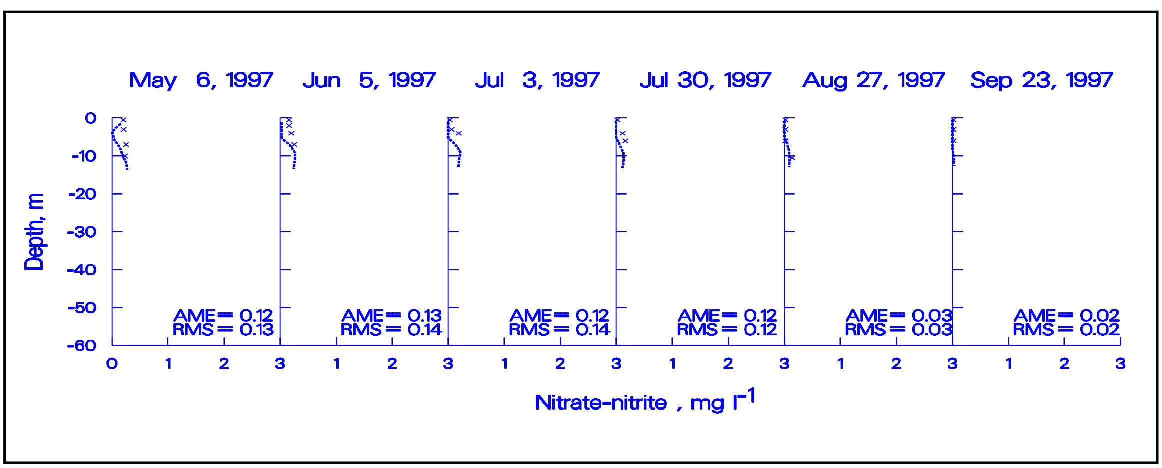

Figure A191. 1997 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for station 45

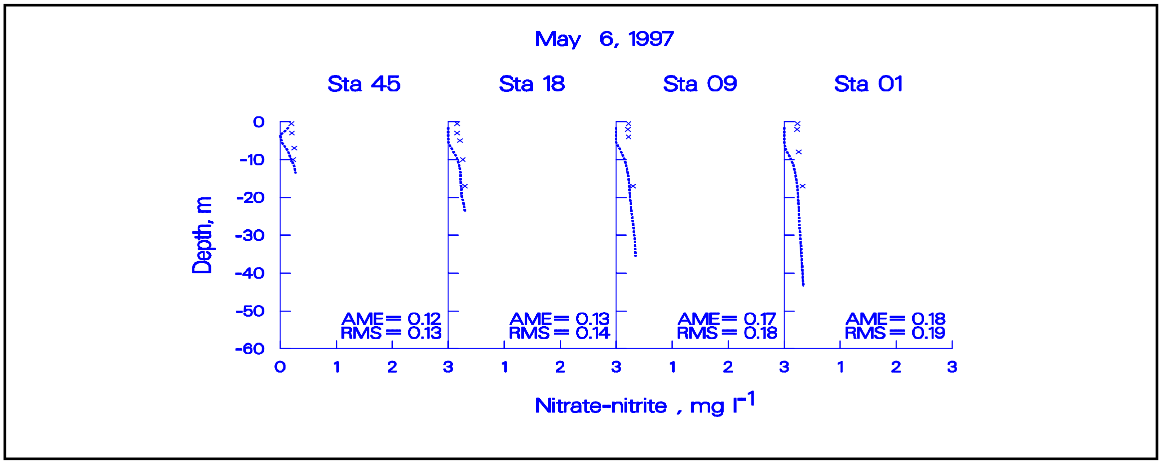

Figure A192. 1997 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem, May 6

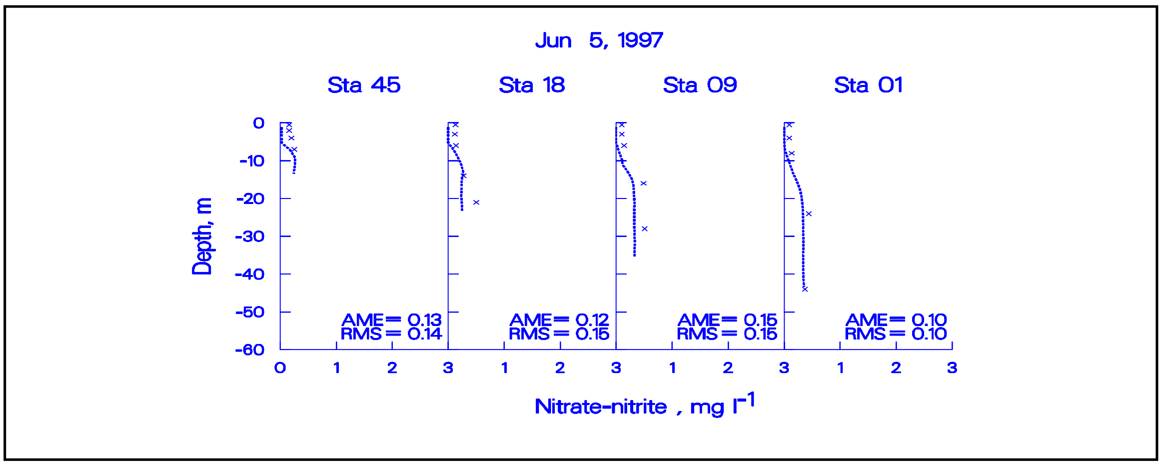

Figure A193. 1997 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem, June 5

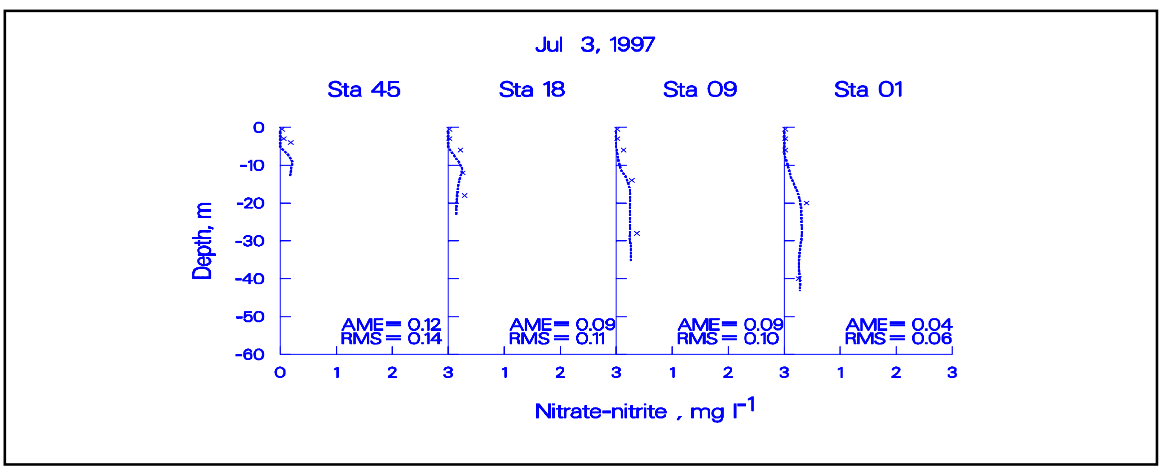

Figure A194. 1997 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem, July 3

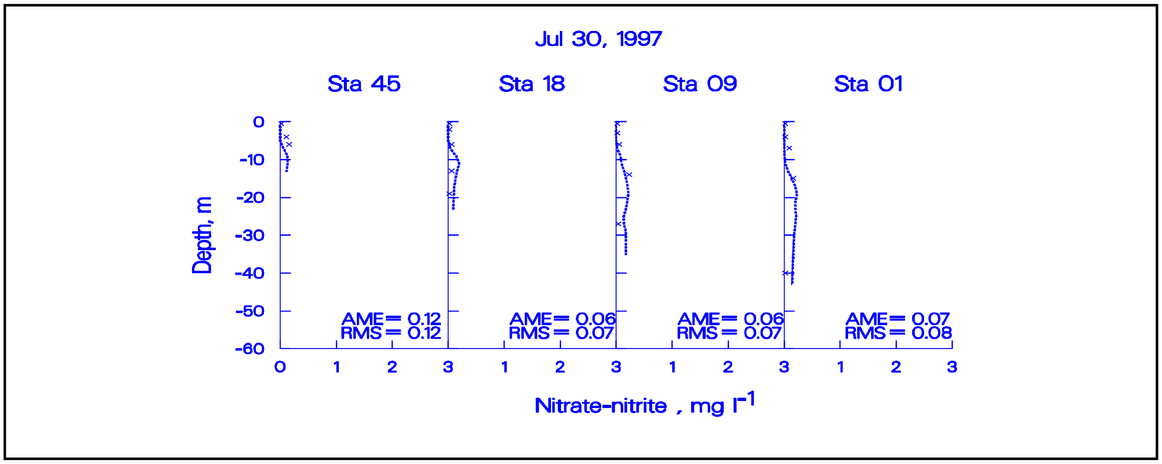

Figure A195. 1997 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem, July 30

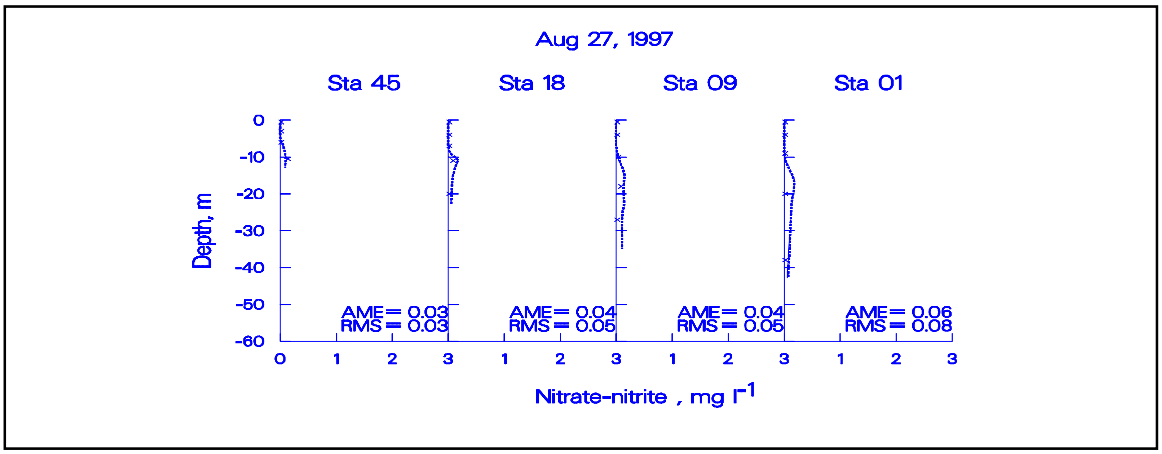

Figure A196. 1997 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem, August 27

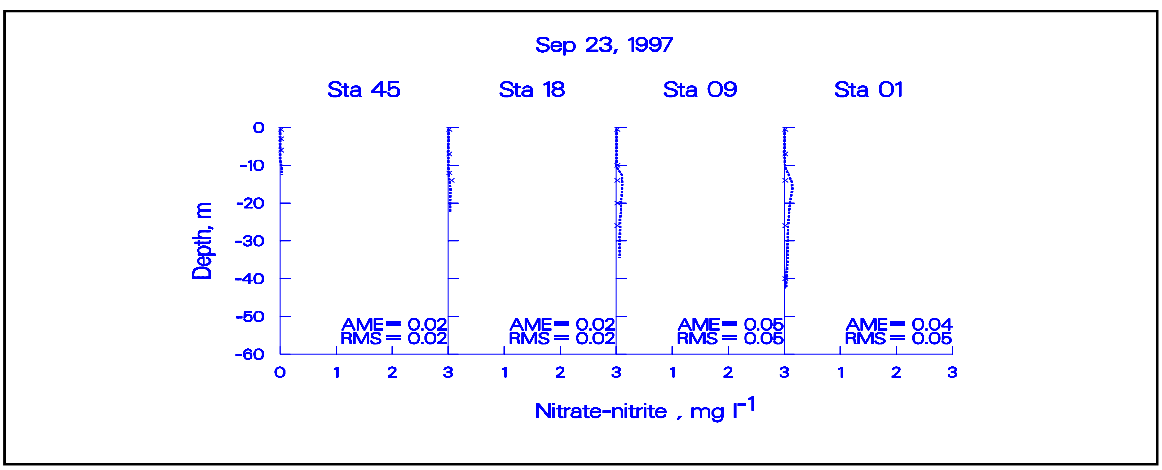

Figure A197. 1997 Allatoona Reservoir computed (...) versus observed (x) nitrate-nitrite for stations along mainstem, September 23

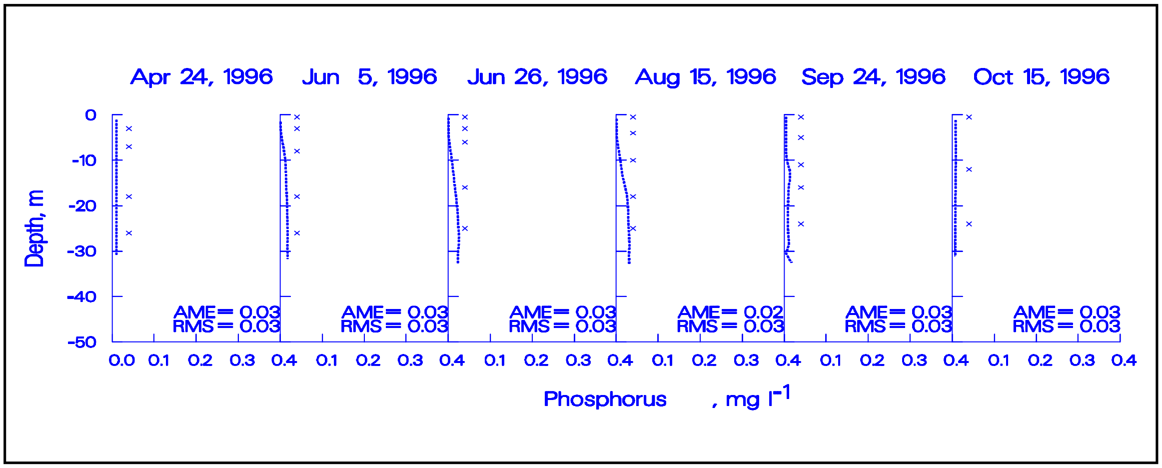

Figure A198. 1996 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 09

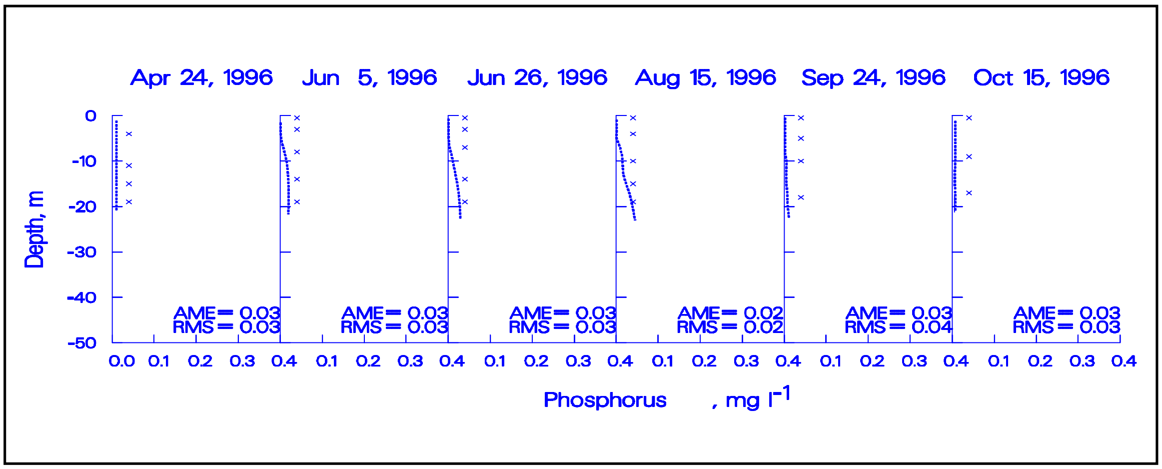

Figure A199. 1996 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 18

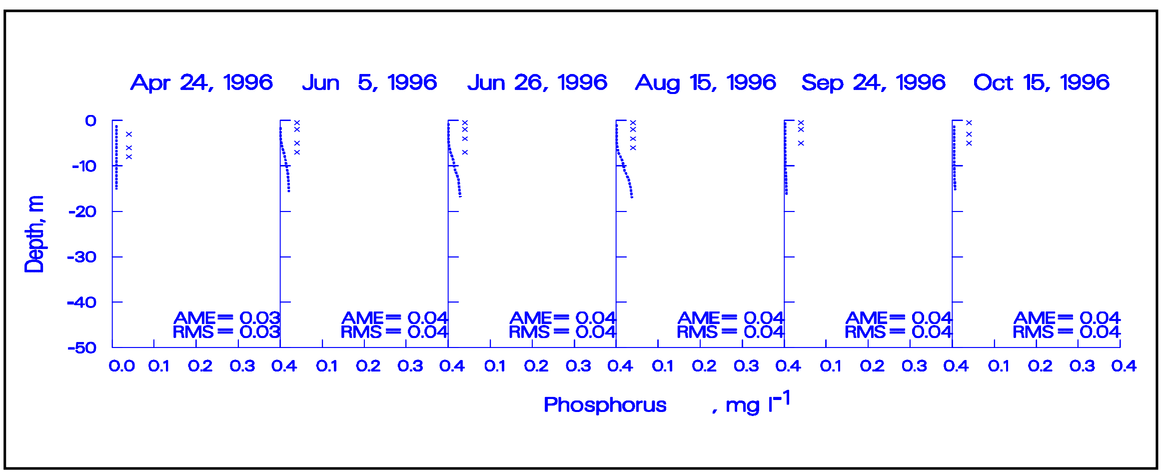

Figure A200. 1996 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 45

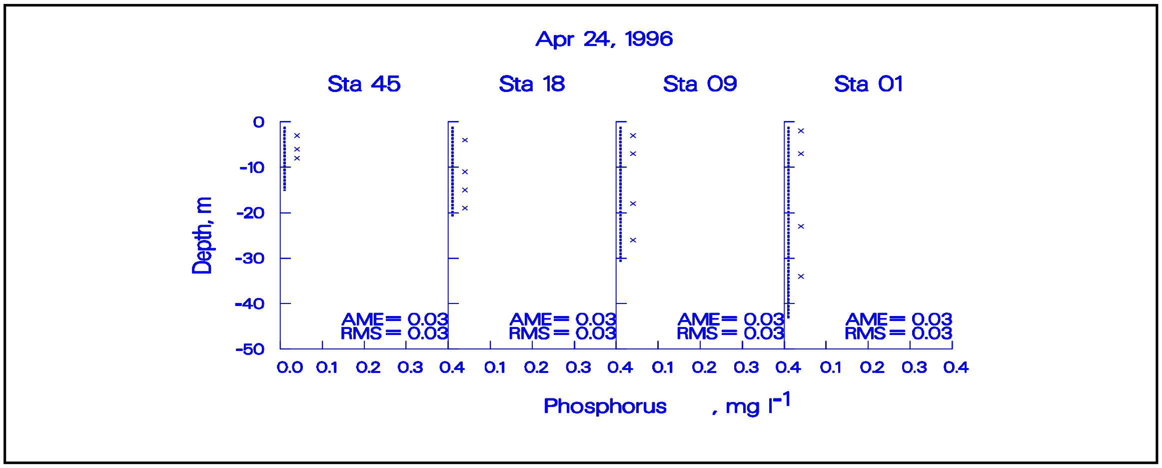

Figure A201. 1996 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, April 24

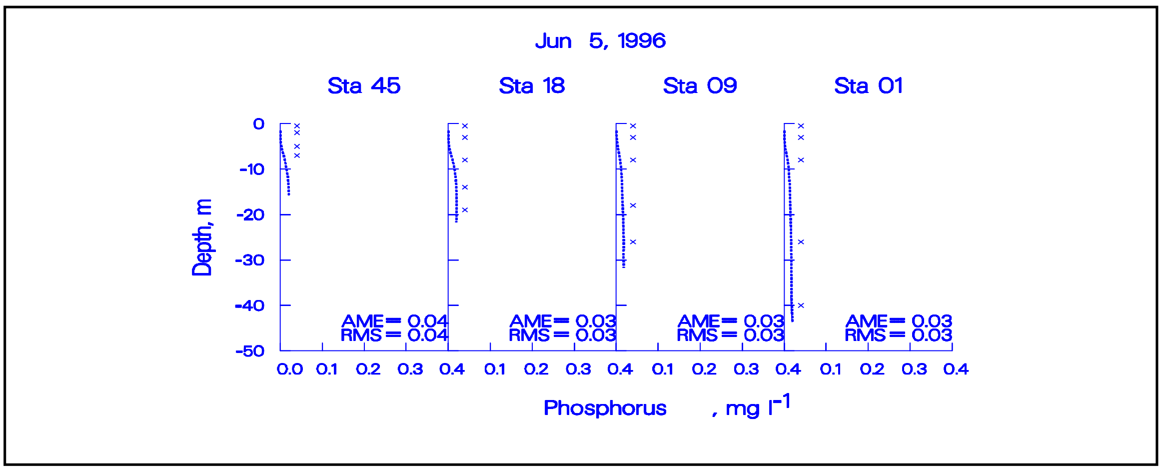

Figure A202. 1996 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, June 5

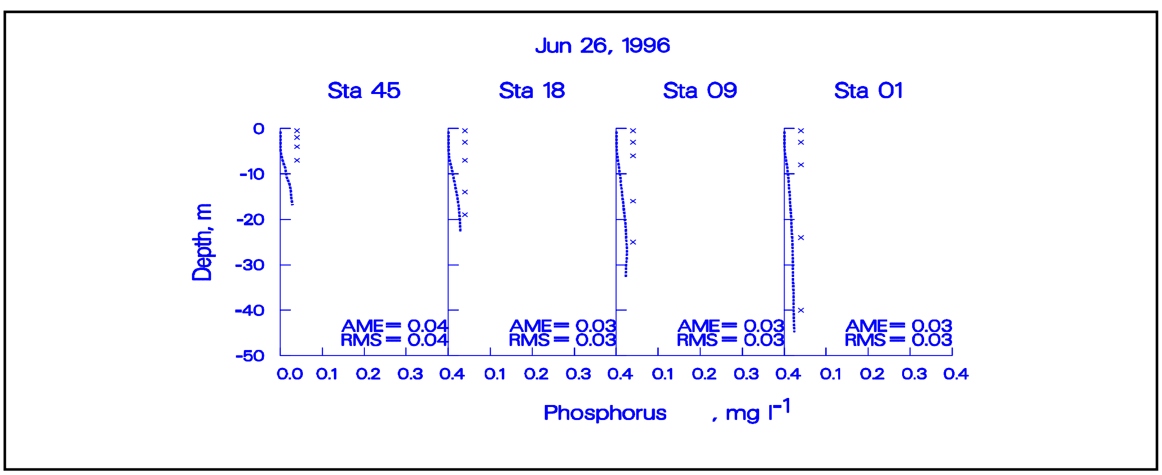

Figure A203. 1996 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, June 26

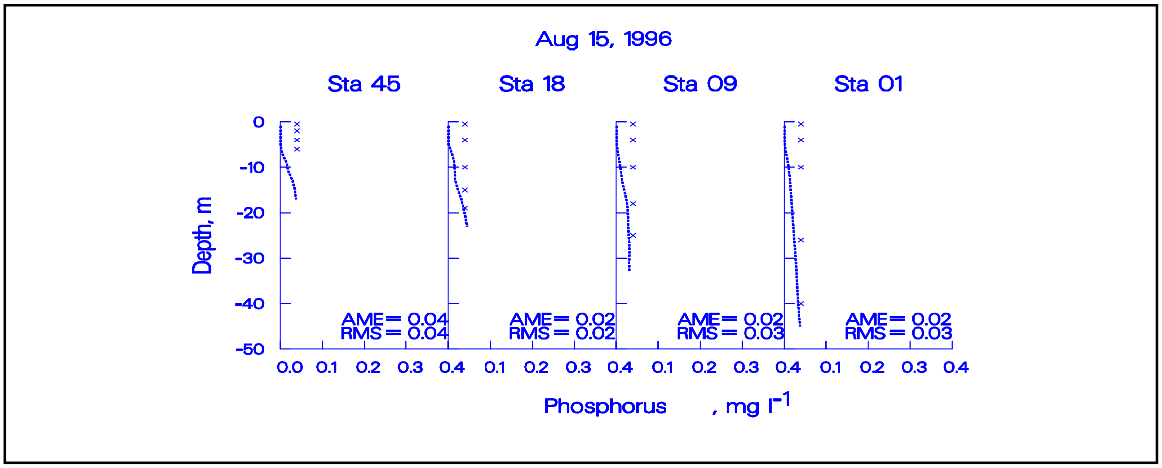

Figure A204. 1996 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, August 15

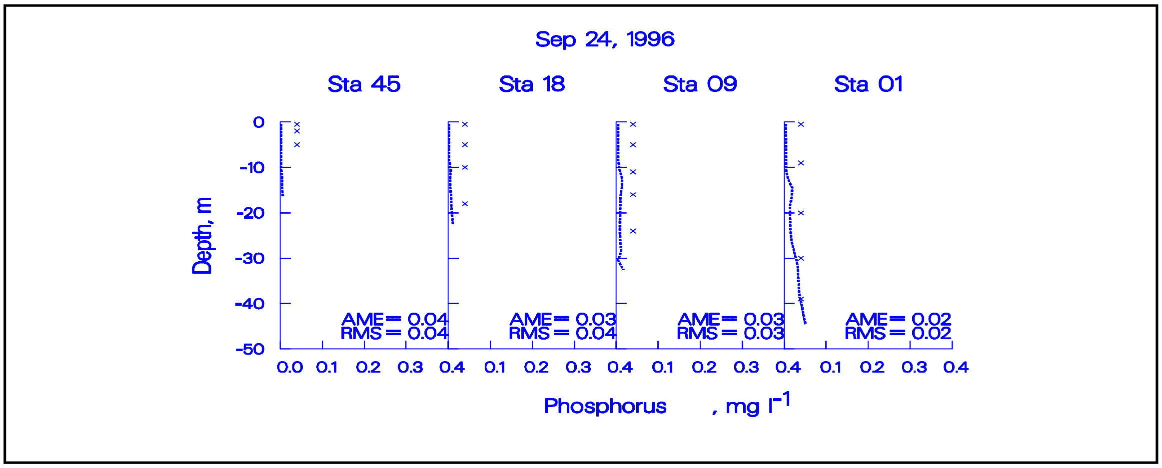

Figure A205. 1996 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, September 24

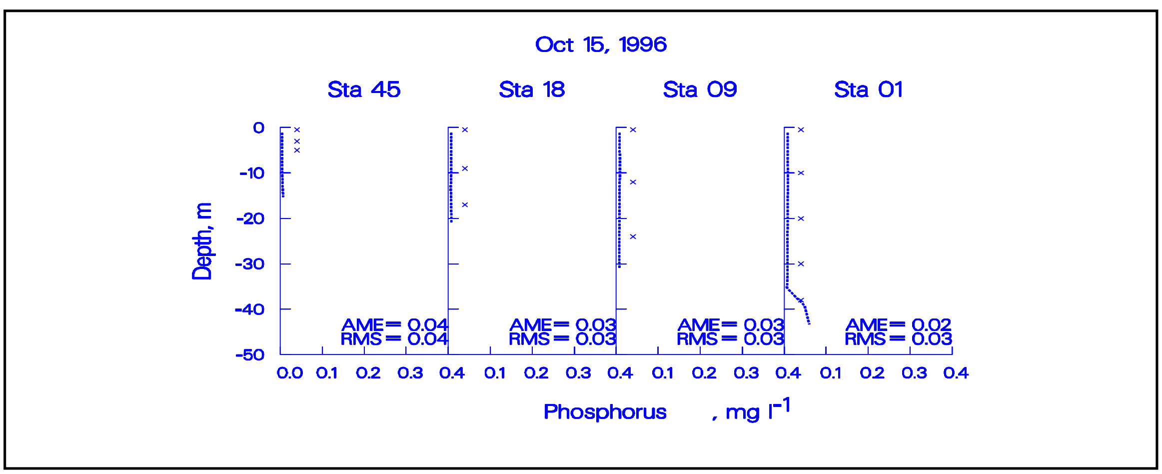

Figure A206. 1996 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, October 15

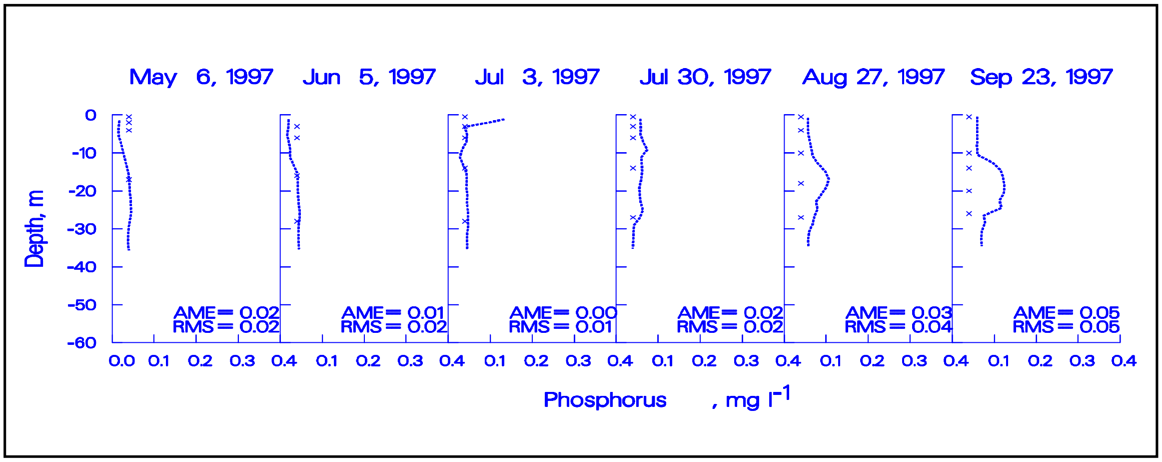

Figure A207. 1997 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 09

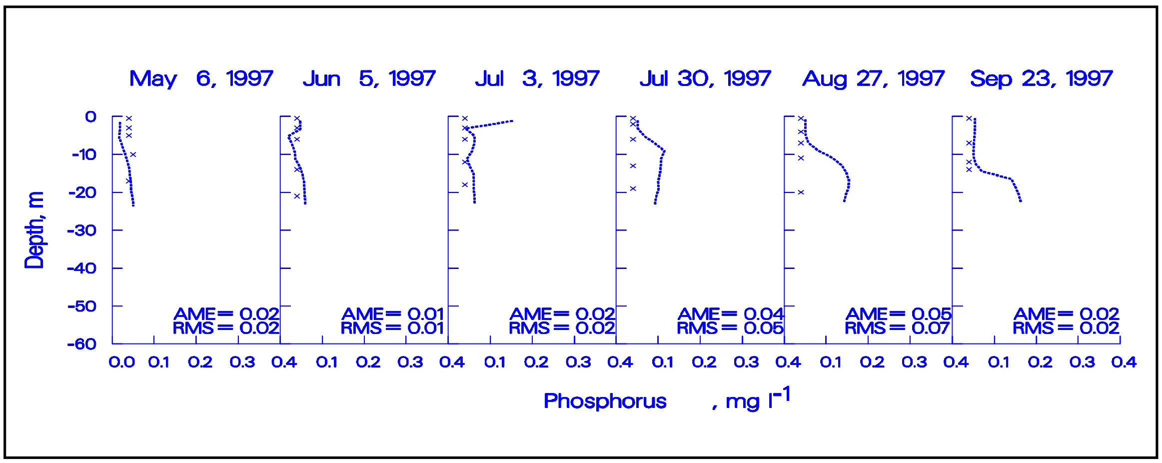

Figure A208. 1997 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 18

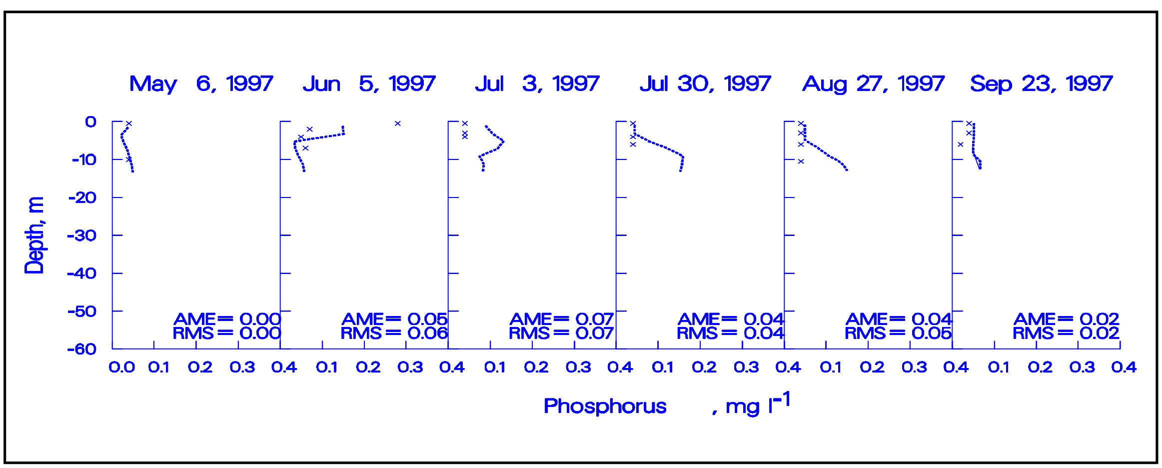

Figure A209. 1997 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 45

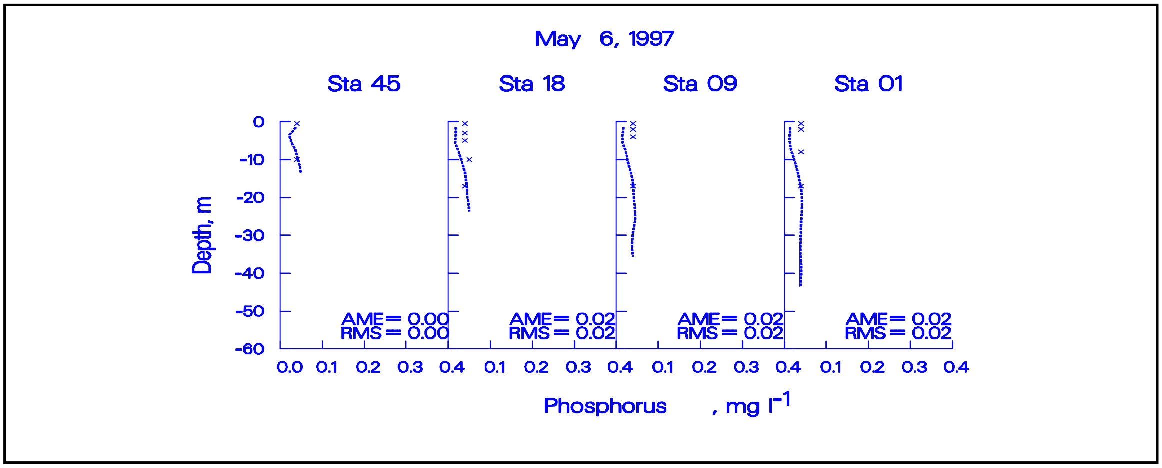

Figure A210. 1997 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, May 6

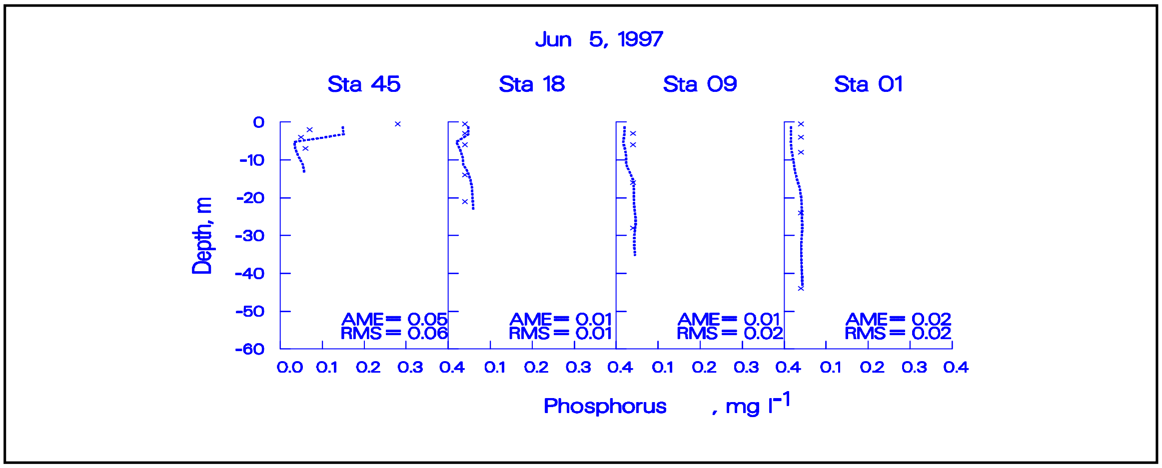

Figure A211. 1997 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, June 5

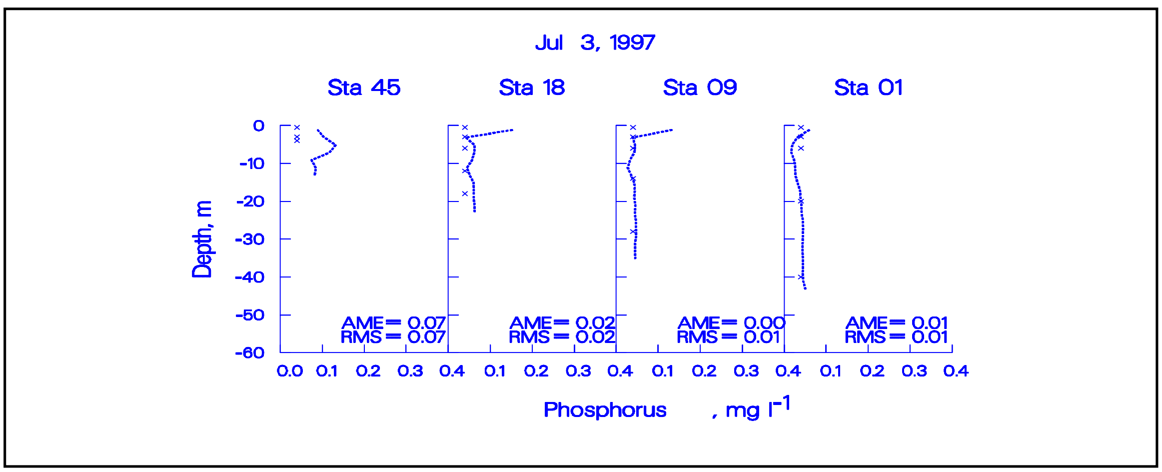

Figure A212. 1997 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, July 3

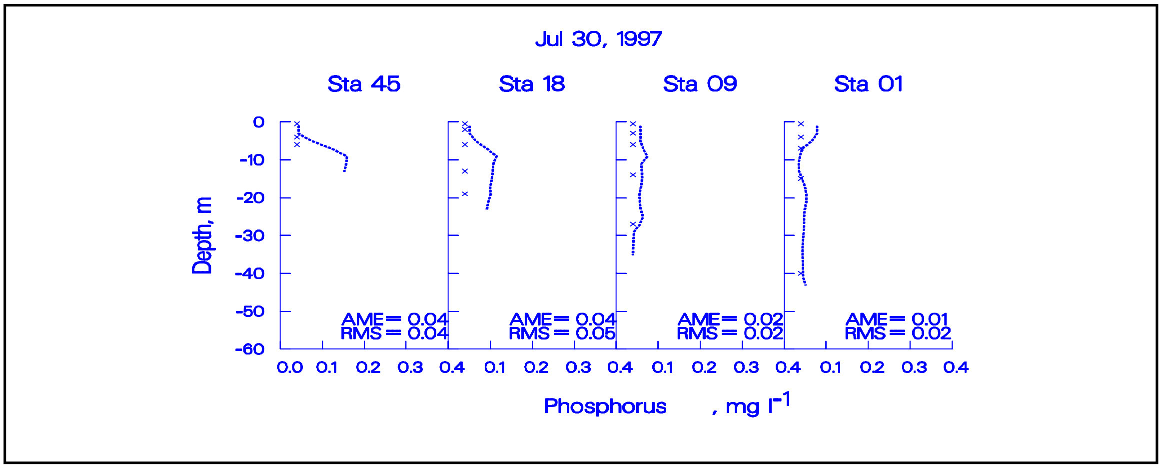

Figure A213. 1997 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, July 30

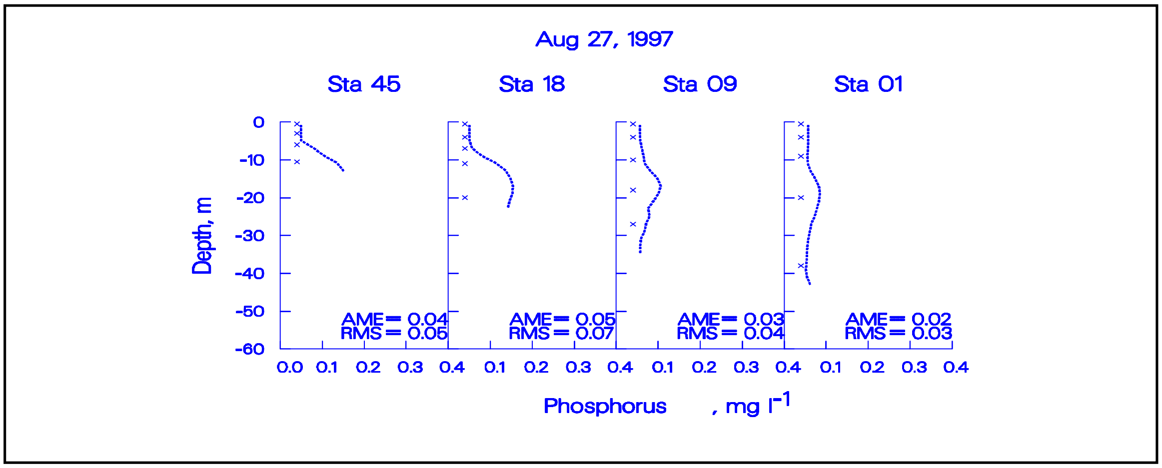

Figure A214. 1997 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, August 27

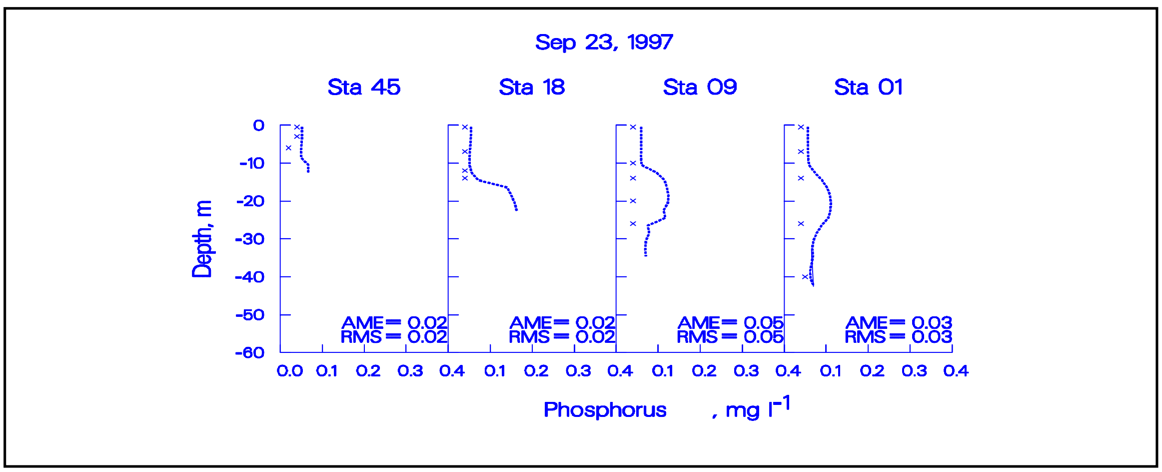

Figure A215. 1997 Allatoona Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, September 23

West Point

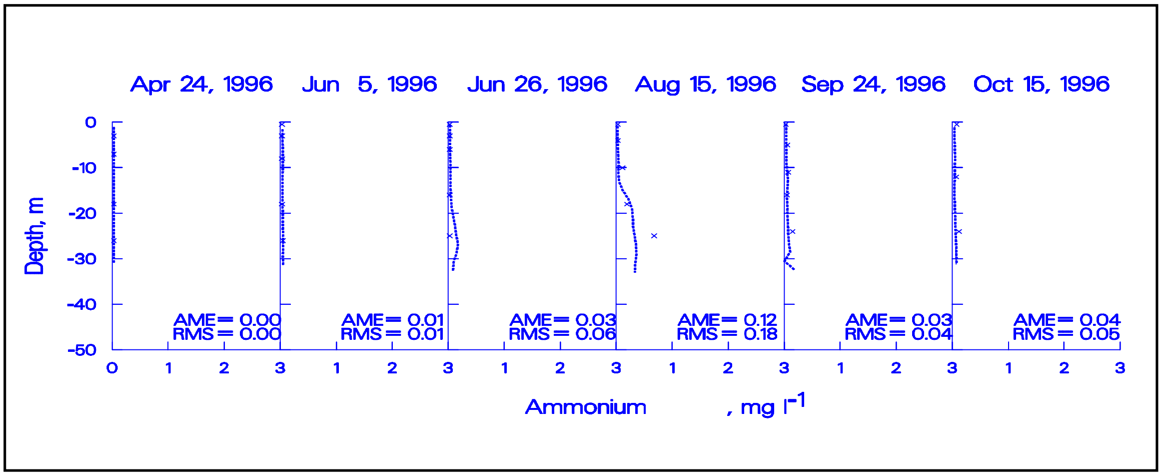

Figure A216. 1996 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 09

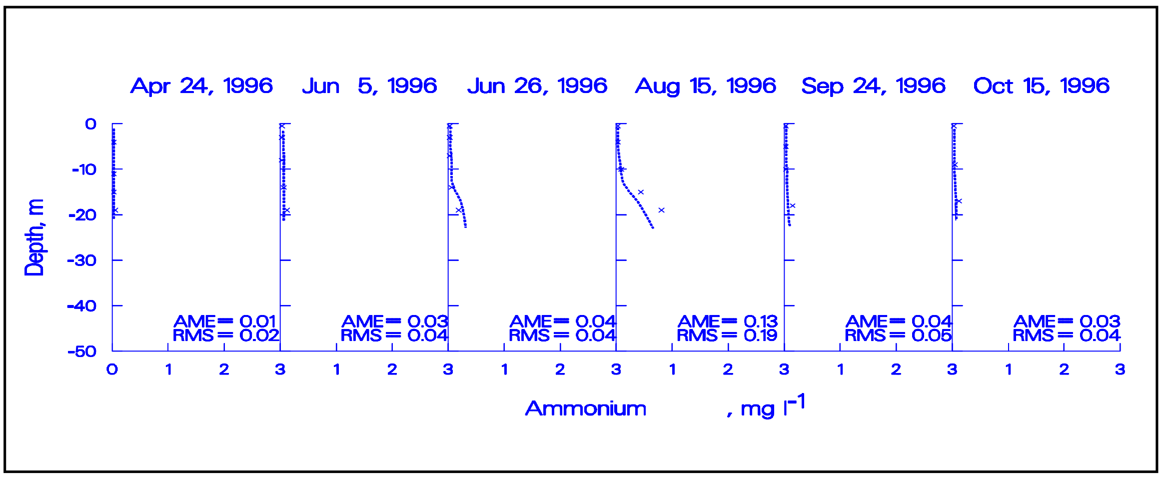

Figure A217. 1996 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 18

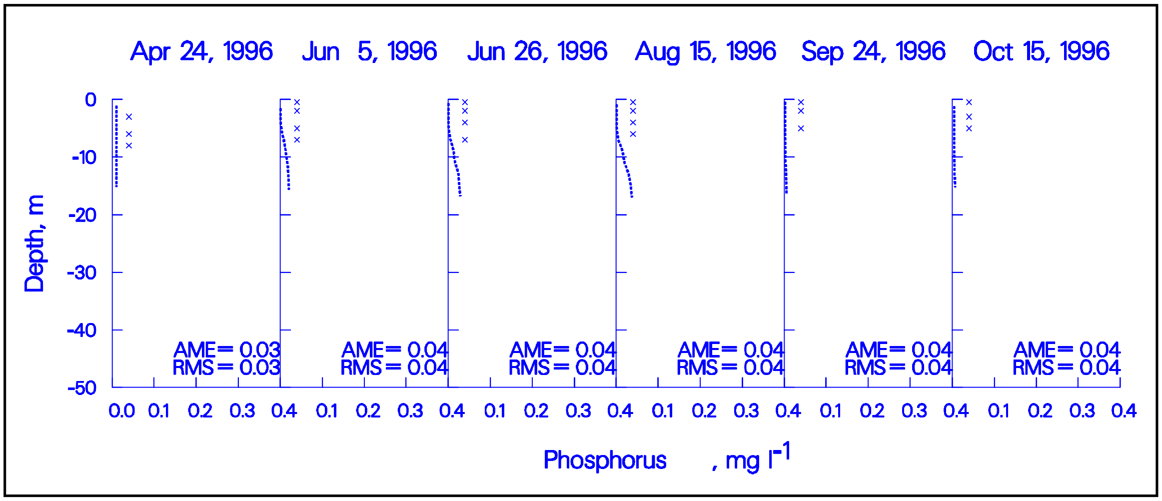

Figure A218. 1996 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 45

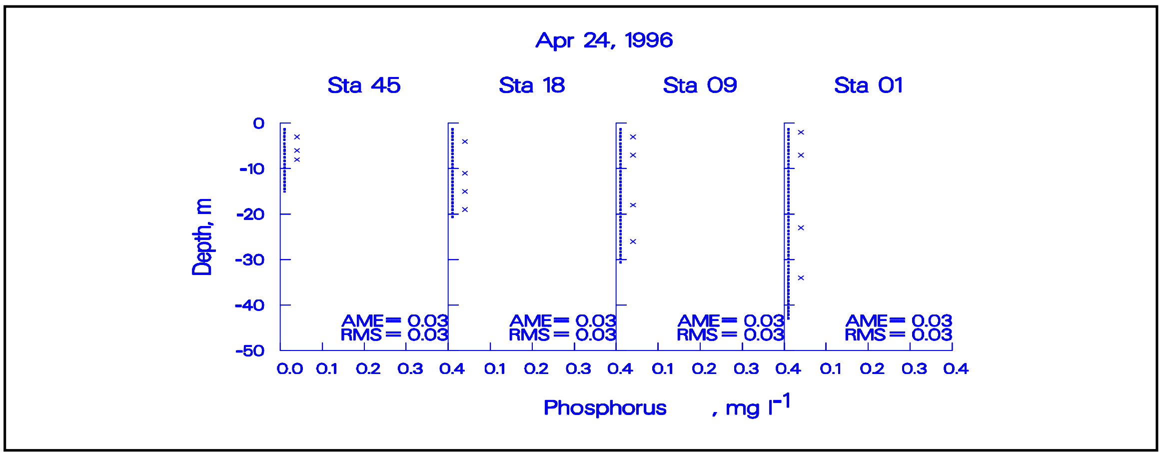

Figure A219. 1996 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, April 24

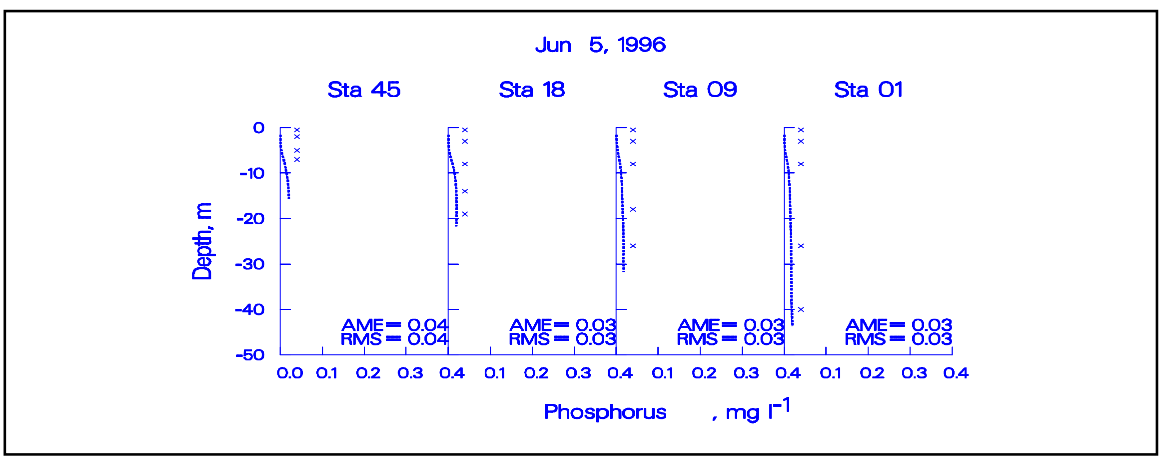

Figure A220. 1996 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, June 5

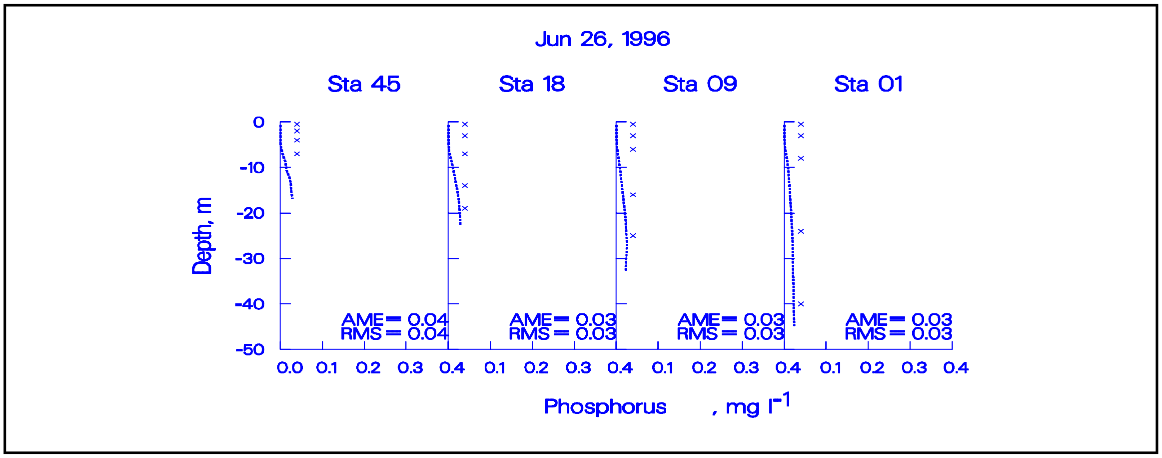

Figure A221. 1996 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, June 26

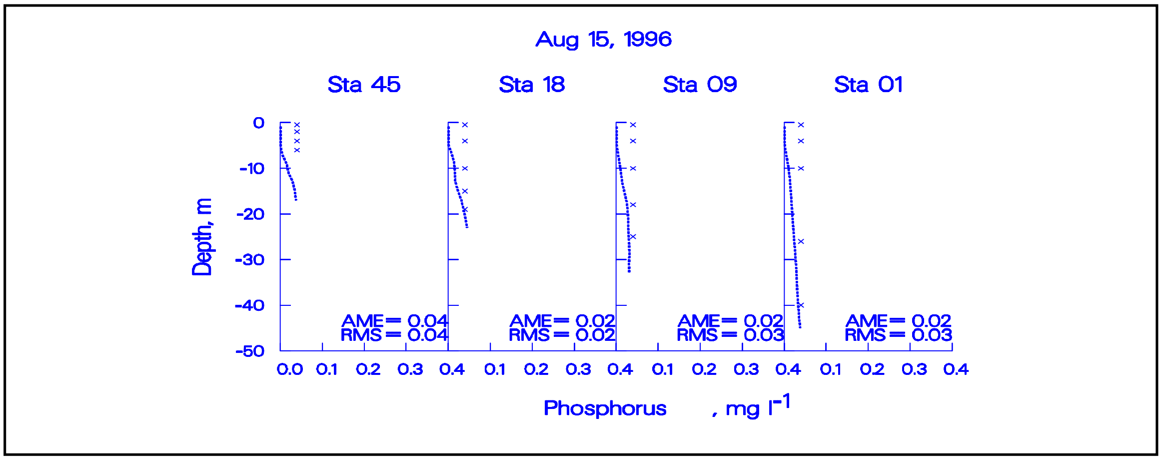

Figure A222. 1996 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, August 15

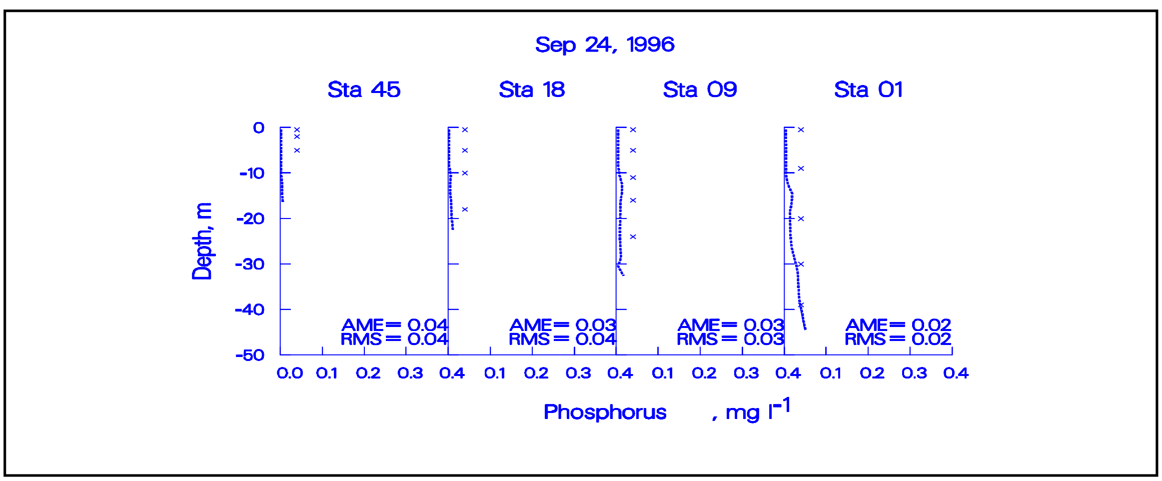

Figure A223. 1996 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, September 24

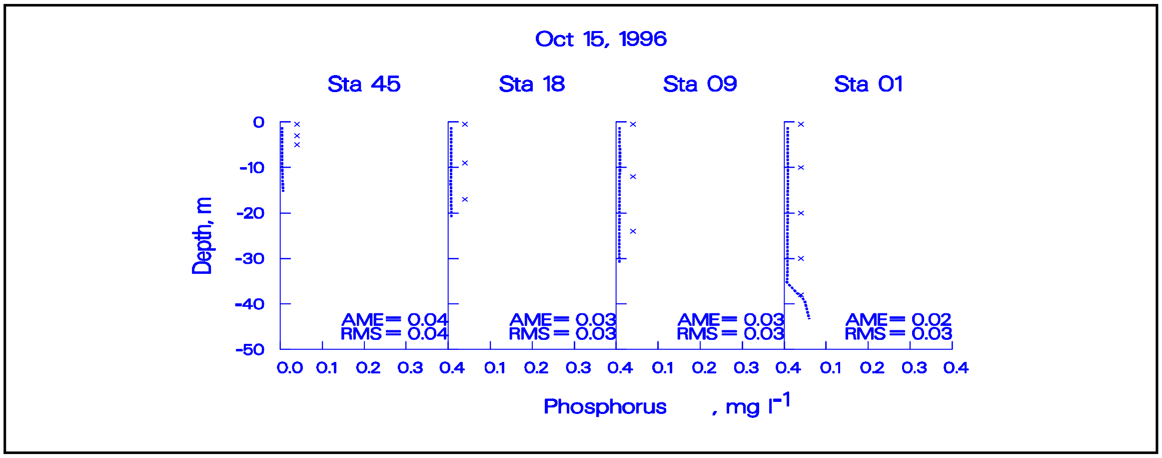

Figure A224. 1996 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, October 15

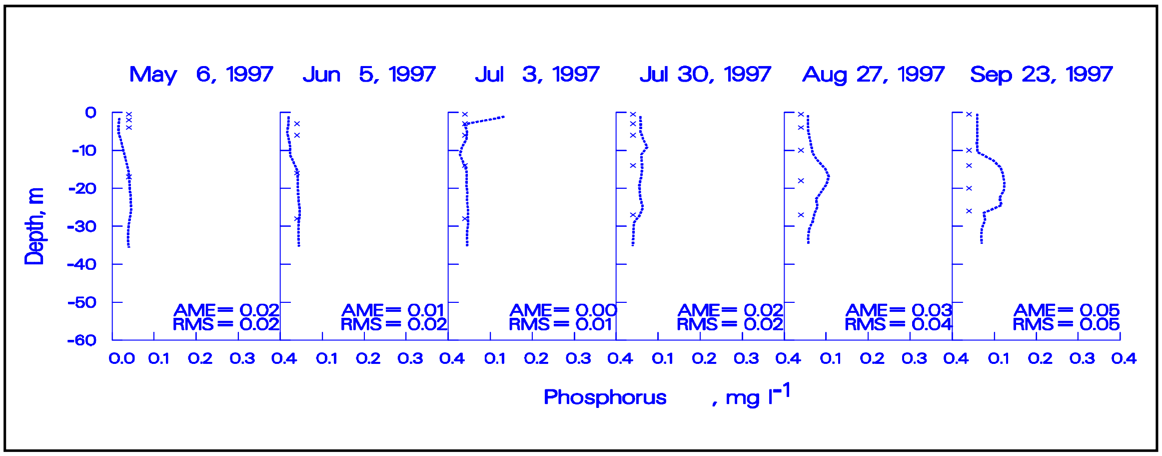

Figure A225. 1997 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 09

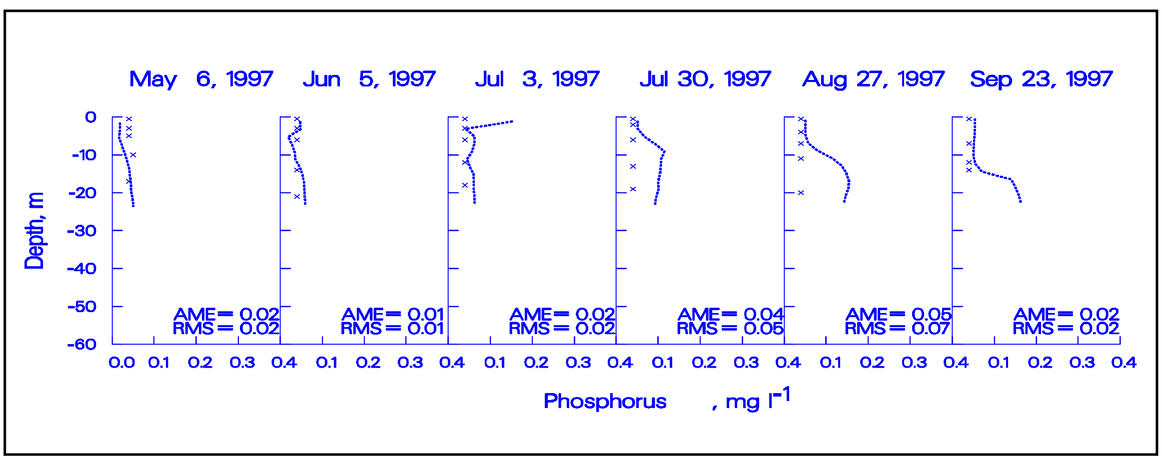

Figure A226. 1997 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 18

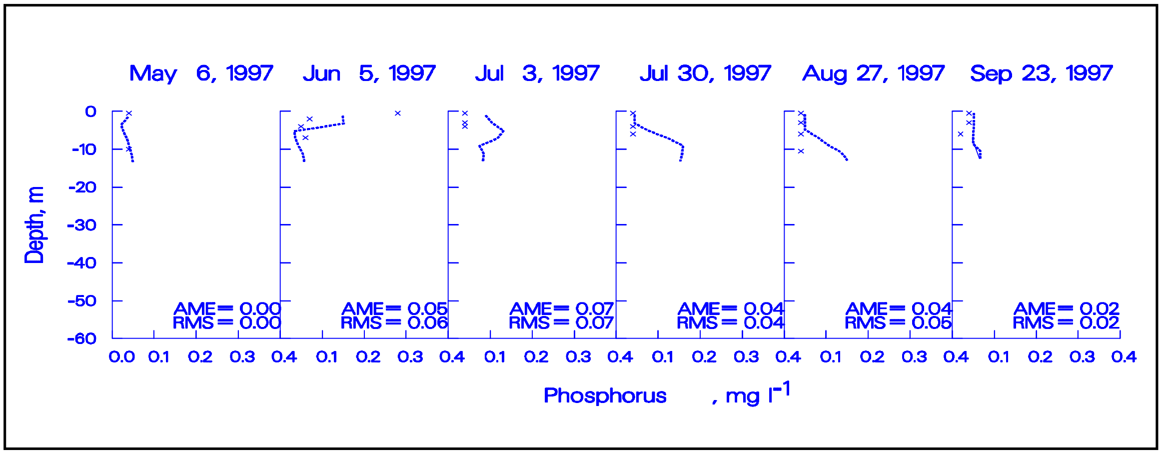

Figure A227. 1997 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for station 45

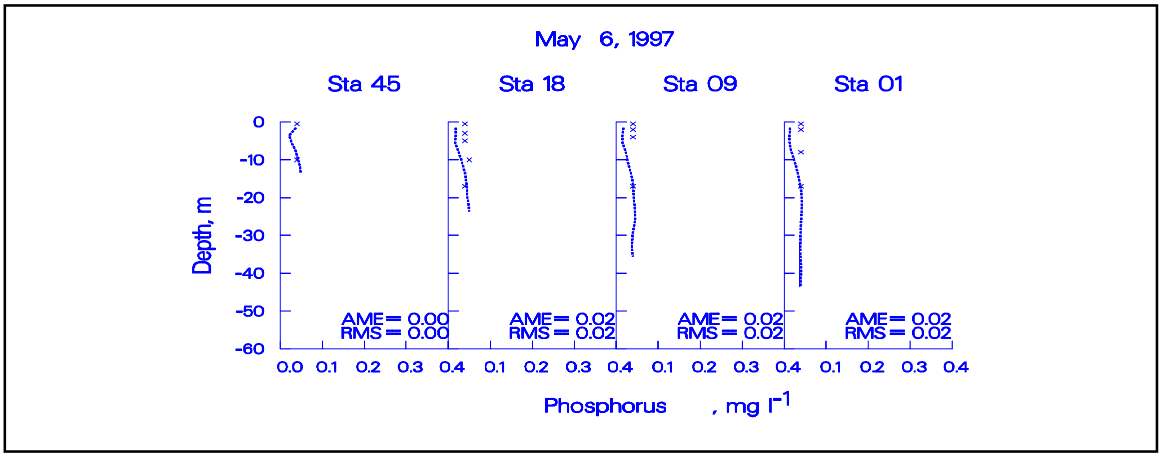

Figure A228. 1997 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, May 6

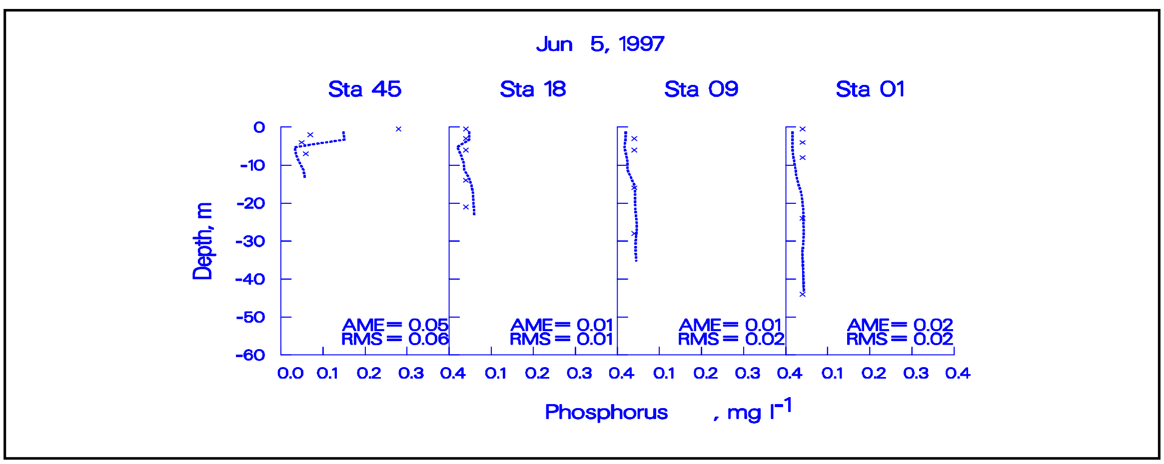

Figure A229. 1997 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, June 5

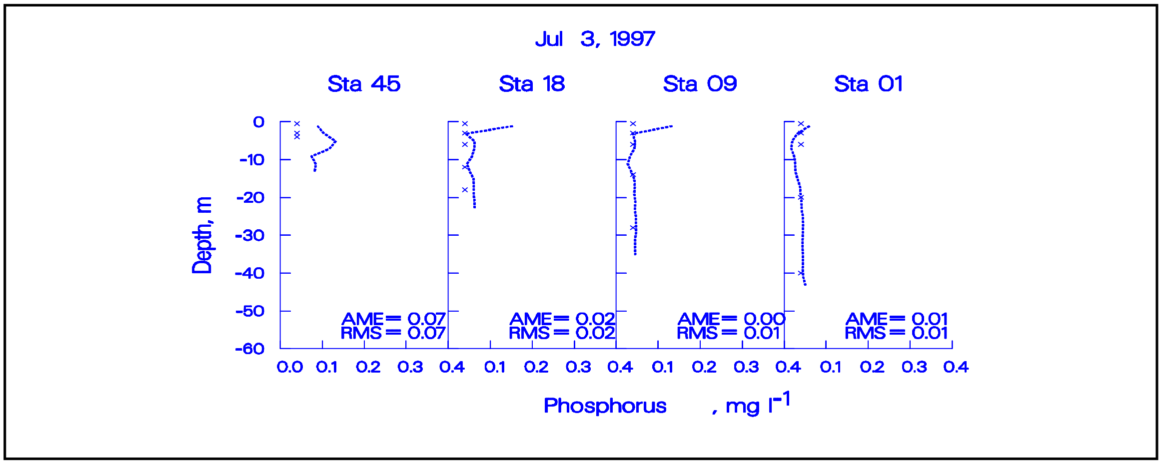

Figure A230. 1997 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, July 3

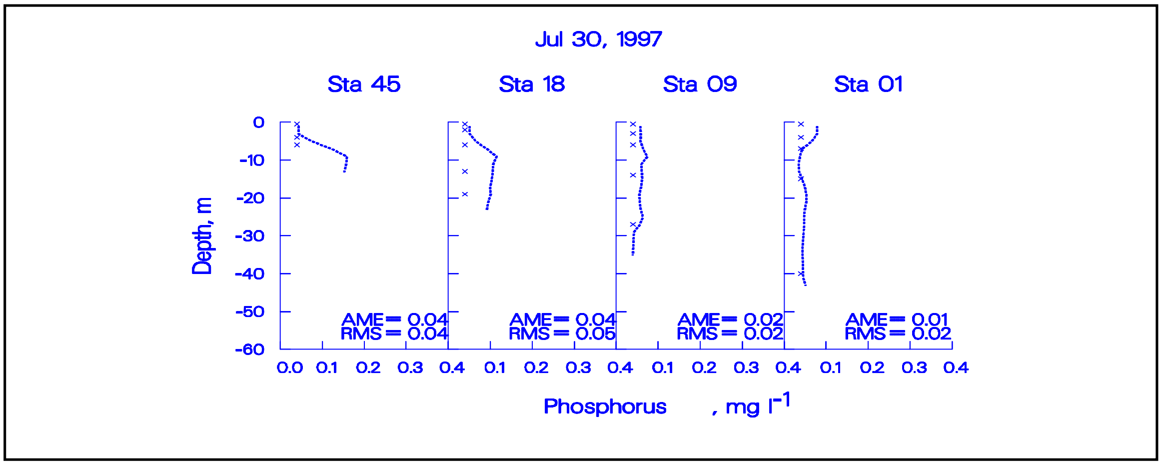

Figure A231. 1997 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, July 30

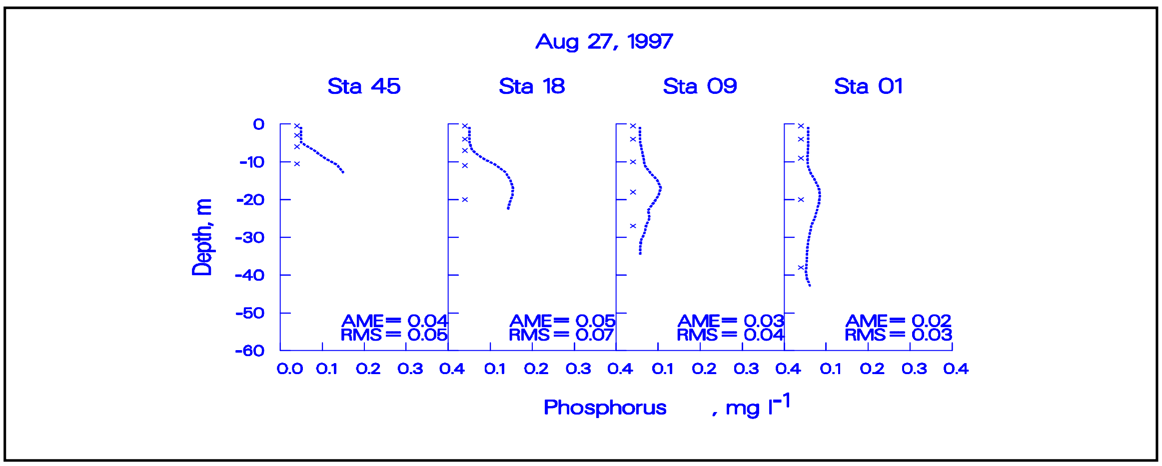

Figure A232. 1997 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, August 27

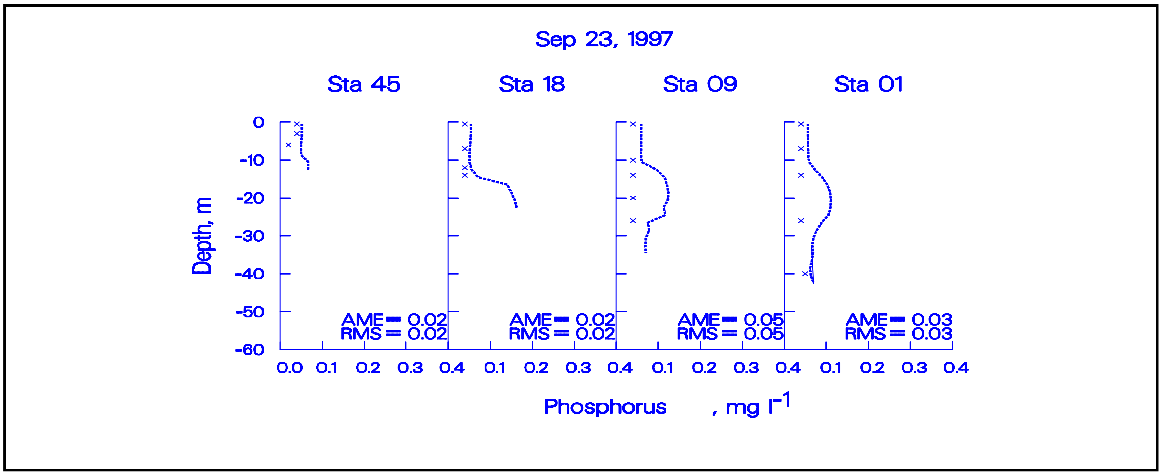

Figure A233. 1997 West Point Reservoir computed (...) versus observed (x) bioavailable phosphorus for stations along mainstem, September 23

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14. ABSTRACT
The Georgia Environmental Protection Division (GEPD) is concerned about the effects of increased nutrient loadings into Allatoona and West Point Lakes from point and nonpoint sources due to projected population growth in the region. Water demand and nutrient loading will most likely increase in the future. The ability to predict the effects of increased nutrient loading in West Point and Allatoona would allow GEDP to set waste load allocations and better manage the reservoirs for water quality in the future. To meet this goal, the GEPD requested the assistance of the Water Quality and Contaminant Modeling Branch at the U.S. Army Engineer Research and Development Center, Waterways Experiment Station, to develop a water quality model for Allatoona and West Point Lakes. CE-QUAL-W2, a two-dimensional, longitudinal and vertical hydrodynamic and water quality model, was chosen for the study. The objective of this study was to provide a calibrated water quality model for Allatoona and West Point Lakes capable of predicting future water quality conditions resulting from changes in water allocations, point/nonpoint nutrient loadings, and reservoir operations.

CE-QUAL-W2 was calibrated for temperature and algal/nutrient/dissolved oxygen interactions for Allatoona and West Point Reservoirs. The model quite accurately captures the physics of both reservoirs. Any alteration in the physics should be predicted with a high degree of accuracy.

15. SUBJECT TERMS
Dissolved oxygen
Nutrients
Water quality models
Hydrodynamic
Two dimensional

16. SECURITY CLASSIFICATION OF:

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